

## REMARKS

Claims 1-22 and 26-28 are pending in the application. Claims 1-3, 13, 19-20 and 26 are presently amended. No new claims have been added by this response. No new matter has been added by these amendments.

## ARGUMENTS

### *Rejections under 35 USC § 103*

To establish a prima facie case of obviousness, a reference or combination of references must: (1) suggest to those of ordinary skill in the art that they should make the claimed invention, and (2) reveal to those of ordinary skill in the art that they would have a reasonable expectation of success. *In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991). Both the suggestion and the reasonable expectation of success must be found in the prior art and not in the Applicant's disclosure. *In re Dow Chemical Company*, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). Here, the Examiner has combined the teachings of as little as two and as many as four separate references to reject the present claims. However, there is nothing in any of the cited references that would motivate one of ordinary skill in the art to combine the teachings of these references to produce the presently claimed invention. Moreover, there is nothing in any of the cited references that would provide one of ordinary skill in the art with a reasonable expectation of success in making the combination in the presently claimed invention.

### Claim 1 and its dependant claims

U.S. Pat. No. 5,783,266 to Gehrke and U.S. Pat. No. 4,177,310 to Steeves have been principally relied upon in rejecting independent claim 1 and dependent claims 3-11, while U.S. Pat. No. 6,228,486 to Kittel *et al.* and U.S. Pat. No. 5,110,643 to Akao *et al.* have been cited in relation to several elements recited in other claims that depend from independent claim 1.

Gehrke recites several gum wrapper structures, including a structure having, in order, a heat seal layer, polymeric tie layer, foil, polymeric tie layer, and paper. (col. 4, line 62 – col. 5, line 46). As the Examiner notes Gehrke does not describe an electron cured layer over a paper

layer or ink layer between paper and electron beam layer. However, the Examiner argues that it would have been obvious to provide an electron beam cured layer in light of Steeves.

It is respectfully submitted that there is no suggestion in the art of record to combine Steeves with Gehrke. In addition, even if the combination were made, all of the elements of the amended claims are still not suggested or disclosed.

Gehrke recites that additional layers on top of the paper layer may include a layer to provide a suitable printing surface and one or more layers on the printed layer to protect the ink. Gehrke does not suggest or teach the structure as presently claimed, namely, in order, a metal foil, a polymer layer, a paper layer, an ink layer, an electron beam cured layer, and a wax layer. Gehrke merely suggests that an additional layer may be used on top of the paper layer to provide a suitable printing surface and that an additional one or more layers may be used to protect the print. Because an additional layer on top of the paper (and not merely paper itself) must be used to create a suitable printing surface, the additional layer must not be paper. However, Gehrke does not teach or suggest what the composition of the additional layer should be. As a result, Gehrke does not provide one skilled in the art with any indication on what compositions and what combination of compositions would be successful.

It is argued in the Office Action that it would be obvious to combine Steeves (with its disclosure of an electron beam cured layer on a paper layer) with Gehrke. This argument is traversed in two respects. First, Steeves discloses an electron beam cured layer on a paper layer and *not* an electron beam cured layer on top of an ink layer, which is the structure of the presently amended claim 1. Second, the resultant structure of combining Steeves with Gehrke, as the Examiner suggests, would be, in order, heat seal layer, polymeric tie layer, foil, polymeric tie layer, paper, additional layer (other than paper), ink, electron beam cured layer. Not only is the electron beam cured layer not in contact with the paper (as taught by Steeves), there are two layers between the electron beam cured layer and the paper. Thus, one skilled in the art could not learn the embodiment of claim 1 from the alleged teachings of Gehrke and Steeves.

Claim 1 as amended recites a gum packaging laminate comprising in order: a metal foil, a polymer layer, a paper layer, an ink layer, an electron beam cured layer, and a wax layer. The references cited by the Examiner, by themselves or in combination, fail to suggest or disclose a

paper layer, ink layer, and electron beam cured layer in that order and without any intervening layers. As noted above, Gehrke suggests an ink layer, but it does not suggest an ink layer directly on top of a paper layer; nor does it suggest an ink layer with a electron beam cured layer on top of it. Steeves suggests a paper layer adjacent an electron beam cured layer, but it does not suggest an ink layer. Although Gehrke and Steeves together disclose each of the individual elements (i.e., a paper layer, an ink layer and an electron beam cured layer), there is no suggestion that these layers can be used successfully in the combination presently claimed. Mere disclosure of individual elements does not render as obvious a novel combination of such elements.

The references cited, either alone or in combination, also fail to suggest or disclose a wax layer on top of an electron beam cured layer. The Office Action addresses the use of wax, indicating that Akao suggests a wax layer coated over an electron beam cured layer. However, Akao merely discloses a wax layer on a metallic membrane layer. It does not teach or suggest a wax layer on an electron beam cured layer; nor does it provide one skilled in the art with a reasonable expectation of success in applying a wax layer to an electron beam cured layer. (*See Ex parte Bader*, Bd. Pat. App. & Int. 2002 (unpublished), copy provided in a previous response and posted on the Internet at <http://www.uspto.gov/web/offices/dcom/bpai/decisions/fd980119.pdf>--concluding that one skilled in the art would not substitute one material for another with a reasonable expectation of success in obtaining a laminate film having predictable layer interactions and ultimate film performance).

For the reasons set forth above, it is believed that independent claim 1 as presently amended and dependent claims 2-12 are patentable over the references cited.

#### **Claim 13 and its dependant claims**

U.S. Pat No. 5,478,643 to Peiffer *et al.* and Steeves *et al.* have been principally relied upon in rejecting independent claim 13 and dependent claims 14 and 16-17. U.S. Pat. No. 6,045,654 to Kjølgaard, along with Gehrke, Akao, et al., and Kittel are believed to have been cited in relation to several elements recited in other claims that depend from independent claim 13.

The Office Action characterizes Peiffer as a matte transfer metallization film for chewing gum with the structure of, in order, *a polymer film, a metal foil, a polymer/adhesive layer and a paper support*. Admittedly Peiffer does not describe an electron cured layer over a paper layer. However, the Office Action argues that it would have been obvious to provide an electron beam cured layer in light of Steeves.

It is respectfully submitted that there is no suggestion in the art of record to combine Steeves with Peiffer. In addition, even if the combination were made, all of the elements of the presently amended claims are still not suggested or disclosed.

Peiffer describes a reusable matte transfer metallization film for transferring a metallized layer (a thin metal layer that has been applied to the film by vapor deposition) onto a support of paper, board or glass. In order to accomplish this, an adhesive is applied over the metal or onto the support, and the metal layer and support are brought into contact. The transfer film is removed after the adhesive cures to provide a metallized layer on the support. The transfer film is used to provide a metal surface with a uniform matte sheen on a support that otherwise could not be directly metallized to provide those characteristics. The process of Peiffer results in a metallized layer adhered to the support with an adhesive.

Steeves describes another way of metallizing paper. According to Steeves, a coating is applied to the paper and cured with an electron beam to provide a smooth and uninterrupted resin film. This smooth resin film allegedly may, unlike rough-surfaced paper, be metallized to provide a smooth metallic surface. (See column 1, lines 20-23, column 2, lines 34-36.)

Both Peiffer and Steeves address the problem of how to metallize a paper substrate. However, the approaches employed by the references are far different and would not be used in conjunction with one another. There is no reason for one skilled in the art to adopt both approaches at the same time or combine one with the other. Any attempt to use these elements in combination would result in a paper substrate that has been metallized twice.

This is contrary to the argument set forth on page 7, lines 12-15 of the Office Action. There, the position is taken that it would be obvious to modify Peiffer to provide a smooth surface as taught by Steeves. The reason Steeves desires to provide the smooth surface is to render the substrate receptive to a metallized layer for attaining a smooth metallic surface.

However, if one went to the effort of following the technique of Peiffer (metallizing a transfer film, applying adhesive, contacting the support, waiting for the adhesive to cure and then removing the transfer film), one would already have created the desired metallized product. There would be no need to coat and cure the electron beam cured layer of Steeves to attain the smooth metallized surface.

Claim 13 as amended recites a gum package formed from a laminate having layers in the following order: *a polymer layer, an inorganic layer, a bonding layer, a paper layer, an ink layer, an electron beam cured coating, and a wax layer*. With regard to claim 13, the Office Action cites an intermediate structure shown in Peiffer, which is temporarily formed during the transfer metallization process. The intermediate structure is formed only temporarily and has a construction of *transfer film, metallized layer, adhesive, support*. After the adhesive has cured, the transfer film is removed to provide the final structure *metallized layer, adhesive, support*.

Noting that Peiffer does not describe an electron beam cured layer, the Office Action relies upon Steeves with regard to that element of claim 13. For the reasons set forth above, one skilled in the art would find no suggestion or motivation to combine these references. However, even if they were to be combined, one would utilize the final structure of Peiffer, not the intermediate structure. Again, the purpose of the Peiffer transfer metallization process is to produce a support with a metallic surface having a uniform matte sheen. Thus, the combined structure would be *metallized layer, adhesive, support, electron beam cured layer and metallized layer*, which includes two metallized layers and no polymer layer on the side of either of the metallized layers opposite a paper layer.

If one were to instead combine the intermediate structure of Peiffer with Steeves as also suggested in the Office Action, the resulting combination would include a polymer layer on the side of a metallized layer opposite the paper, in which the polymer layer is only weakly adhered to the metallized layer. This is because the transfer film (the polymer layer) of Peiffer is specifically designed to have good release characteristics with regard to the metallized layer being transferred. In fact, the transfer film includes migratory slip additives to provide dehesive action to reduce the adhesion of ink and metal. (See column 6, lines 10-18.) Such a weakly

adhered polymer layer would obviously lead to delamination problems and would not be suitable in a gum wrapper.

Even if there is motivation to combine the intermediate structure of Peiffer with Steeves as suggested in the Office Action, the resultant structure would still also be lacking (1) an ink layer between the paper layer and the electron beam cured coating, and (2) a wax layer on top of the electron beam cured coating.

First, Steeves discloses printing on top of metallized paper that has an electron beam cured coating such that the structure is, in order, paper, electron beam cured coating, metallized layer, ink. Steeves also discloses printing on one side of the paper after the other side has been cured and metallized such that the structure is, in order, ink, paper, electron beam cured coating, metallized layer. Steeves does *not* disclose a structure with a layer of ink between the paper layer and the electron beam cured coating, nor does it suggest such a structure. Also, there is no suggestion providing one skilled in the art a reasonable expectation of success in applying an electron beam cured coating on top of an ink layer.

Second, none of the references cited by the Examiner teach the application of a wax layer on top of a electron beam cured coating. The Office Action addresses the use of wax, indicating that Akao suggests a wax layer coated over an electron beam cured layer. However, Akao, as the Examiner noted, merely discloses a wax layer on a metallic membrane layer. It does not suggest or disclose a wax layer on an electron beam cured layer; nor does it provide one skilled in the art with a reasonable expectation of success in applying a wax layer to an electron beam cured layer.

For the reasons set forth above, it is believed that independent claim 13 as presently amended and dependent claims 14-22 are patentable over the references cited.

#### **Claim 26 and its dependant claim**

Claims 26 and 27 have been rejected as allegedly obvious based on U.S. Pat. No. 6,010,757 to Yamamoto *et al.* in combination with U.S. Pat. No. 6,228,486 to Kittel *et al.* Yamamoto describes a surface coating composition that can be applied to a resin or paper base layer (or a variety of other materials). Once the coating is applied, it is "dried and cured" (*see* col. 12, line 17) to allegedly provide gas barrier properties, transparency and flexibility.

Yamamoto further indicates that a layer of aluminum or a metal oxide (inorganic layer) can be metallized/deposited over the coating (see col. 12, lines 35-46). Yamamoto indicates that a thermoplastic resin can be laminated onto the coating or metallized layer. The patent states that corona treatment can be used as a surface treatment to firmly adhere the thermoplastic resin layer.

The Office Action indicates that Yamamoto in combination with Kittel renders obvious, the structure of claim 26, which is directed to a gum package having a *paper layer, a gas barrier layer and an electron beam cured coating on the paper layer*. With regard to the electron beam cured layer, the Examiner has taken the position that the corona surface treatment described in Yamamoto is the equivalent of electron beam curing. The characterization is respectfully traversed. Corona treatment is a process in which a substrate is passed over a grounded roller and a charged electrode discharges electricity onto the substrate to alter the surface. The electricity can burn contaminants and otherwise clean and enhance the surface of the substrate. The discharge oxidizes and activates the surface for printing, lamination or metallizing. High voltage and very low current is involved in corona discharge. The corona process results in a substrate with an enhanced surface, but which is otherwise substantially unchanged.

Electron beam curing, on the other hand, operates at a much higher power (for example, about 3 megarads or more involving energy of about 125keV or more) in which a cloud of electrons are produced from a tungsten element in a vacuum chamber. The electrons are accelerated at high speed through a titanium foil via a large potential difference. The accelerated electrons have enough energy to break a carbon/carbon double bond and polymerize a liquid coating made up of monomers and oligomers. Electron beam curing creates solid coatings from liquid coatings through free radical polymerization and cross-linking. (See, for example, page 5, line 3 – page 6, line 16 of the specification.) Free radical polymerization can only be achieved if the electrons are accelerated by a power supply that is much more powerful than is available in corona discharge. The result of the electron beam curing process is a polymerized/cross-linked solid coating.

To further clarify the distinction between corona discharge and electron beam curing, claim 26 has been amended to include a more detailed recitation of the electron beam cured layer, i.e., "a coating of electron beam cured, cross linked network of monomers and oligomers."

The differences between a corona treated substrate and an electron beam cured coating having been made clear by argument and by amendment to the language of claim 26, it is respectfully submitted that the rejection based on Yamamoto should be withdrawn. Also, the clear distinction between a corona treated substrate and an electron beam cured coating as described above and is known in the art, renders moot the Examiner's recitation of Kittel.

The combination of Yamamoto and Kittel fails to suggest or disclose a wax layer. Yamamoto discloses that a thermoplastic resin layer can be formed onto a surface-treated resin molding by, among other means, using a known adhesive. As recited in Yamamoto, wax is a known adhesive. Yamamoto, however, does not suggest or disclose a wax layer as presently claimed. Akao also does not suggest the claimed wax layer. Akao, as the Examiner noted, merely discloses a wax layer on a metallic membrane layer. It does not teach or suggest a wax layer on an electron beam cured layer; nor does it provide one skilled in the art with a reasonable expectation of success in applying a wax layer to an electron beam cured layer.

#### **Independent claim 28**

Claim 28 has been rejected as allegedly obvious based on Gehrke, in combination with Steeves, *et al.*, Kittel *et al.*, and Akao, *et al.*

Claim 28 recites a counterband comprising, in order: a metal foil, a polymer adhesion layer, a paper layer, an ink layer, an electron beam cured layer (comprising slips agents), and a wax. This particular combination is advantageous in that it provides long term resistance to the passage of gas and moisture.

At best, Gehrke, Steeves, Kittel and Akao disclose only a few isolated elements of the presently claimed combination. The Office Action suggests that Gehrke discloses a paper layer, a polymer layer, a foil layer and arguably an ink layer. However, Gehrke does not disclose these layers in the order presently claimed nor does it disclose an electron beam cured layer, slip agents or a wax layer.



The Office Action asserts that Steeves discloses a paper layer adjacent an electron beam cured layer. But, Steeves does not disclose a polymer layer, a foil layer, an ink layer, or a wax layer, nor does it disclose an electron beam cured layer adjacent an ink layer.

It is further stated in the Office Action that Kittel discloses slip agents in an electron beam cured layer and an electron beam cured layer on a paper layer. But, Kittel does not disclose a wax layer, an electron beam cured layer adjacent an ink layer, nor a slip agent in an electron beam cured layer. The noted citation (col. 10, line 24) merely refers to the use of slip aids in a UV cured layer and not an electron beam cured layer.

It is suggested in the Office Action that Akao discloses a laminate comprising paper, foil layers, polymer layers and a wax layer. However, Akao does not disclose an electron beam cured layer, an ink layer on top of the paper, nor a wax layer on top of an electron beam cured layer. In fact, as specifically noted in the Action Akao teaches a wax layer over a metallic membrane.

Further, none of these references suggest that a particularly isolated disclosure can be combined with the other particularly isolated disclosures to produce the claimed combination nor do the references indicate that there would be any benefit in doing so.

The proposed combination of elements from all four references in the present rejections therefore is the result of impermissible hindsight. It is improper to combine prior art teachings to render a claimed invention obvious, absent some teaching, suggestion or incentive supporting the combination. In order to make a combination, there must be some reason for the combination other than the hindsight gleaned from the invention itself. Thus, the cited art must provide the motivation for making the combination. Absent such motivation, the claimed invention may not be used as a template to piece together elements from various unrelated documents.

Here, the cited references carry no relationship except that imposed by the present specification and claims. Once removed from the context of the present application, the references fragment into a collection of unrelated disclosures with little bearing on the claimed invention.

In sum, the cited references, either alone or in combination, do not suggest to one of ordinary skill in the art that the claimed invention can be made or practiced with a reasonable

expectation of success. Any motivation to combine the teachings of the cited references is the result of impermissible hindsight. Thus, obviousness rejection of claim 28 should be withdrawn.

**Conclusion**

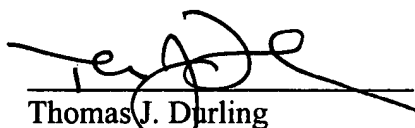
It is requested that all of the objections and rejections set forth in the outstanding Office Action be reconsidered and withdrawn. A notice of allowance is respectfully solicited.

If direct communication will expedite the allowance of the application, the Examiner is invited to telephone the undersigned attorney.

Respectfully submitted,

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